AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

Claim 1 (currently amended): A method for detecting an interaction between a first test agent and a second test agent, comprising:

providing a first fusion construct and a second fusion construct, said first fusion construct having an N-intein and said first test agent, said second fusion construct having a C-intein and said second test agent, wherein at least one of the two fusion constructs has an inactive reporter capable of being converted to an active reporter upon trans-splicing through said N-intein and said C-intein, and wherein said N-intein and said C-intein do not interact with each other;

allowing said first test agent in said first fusion construct to interact with said second test agent in said second fusion construct *in vitro* ~~in a substantially cell free environment~~; and

detecting said active reporter thereby detecting an interaction between the first and second test agent.

Claim 2 (original): The method of Claim 1, wherein said first fusion construct comprises a first inactive reporter fused to the N-terminus of said N-intein.

Claim 3 (original): The method of Claim 2, wherein said inactive reporter is a non-proteinaceous moiety fused to the N-terminus of said N-intein through an amino acid linker.

Claim 4 (original): The method of Claim 2, wherein the first test agent is fused to the C-terminus of said N-intein.

Claim 5 (original): The method of Claim 2, wherein the first test agent is covalently linked to the first inactive reporter.

Claim 6 (original): The method of Claim 2, wherein said second fusion construct comprises a second inactive reporter fused to the C-terminus of said C-intein, and wherein an active reporter is formed upon ligation of said first and second inactive reporters.

Claim 7 (original): The method of Claim 6, wherein said second inactive reporter is a non-proteinaceous moiety fused to the C-terminus of said C-intein through an amino acid linker selected from the group consisting of cysteine, serine, and threonine.

Claim 8 (original): The method of Claim 6, wherein the second test agent is fused to the N-terminus of said C-intein.

Claim 9 (original): The method of Claim 6, wherein the second test agent is covalently linked to said second inactive reporter.

Claim 10 (original): The method of Claim 1, wherein said active reporter is detected based on molecular weight.

Claim 11 (original): The method of Claim 1, wherein said active reporter is detected by a color assay.

Claim 12 (currently amended): The method of Claim 11, wherein said active reporter protein is selected from the group consisting of β-galactosidase, luciferase, green fluorescence protein, blue fluorescence protein, alkaline phosphatase, and horseradish peroxidase~~, and derivatives thereof~~.

Claim 13 (withdrawn): A method for detecting protein-protein interaction, comprising:

providing a first fusion protein and a second fusion protein, said first fusion protein having a first test polypeptide and a first inactive reporter fused to the N-terminus of an N-intein, said second fusion protein having a second test polypeptide and a second inactive reporter fused to the C-terminus of a C-intein, wherein the ligation of said N-intein and C-intein upon trans-splicing results in the formation of an active reporter protein;

mixing said first and second fusion proteins in a substantially cell free environment; and

detecting said active reporter protein.

Claim 14 (withdrawn): The method of Claim 13, wherein said active reporter protein is detectable by a color assay.

Claim 15 (withdrawn): The method of Claim 13, wherein said active reporter protein is selected from the group consisting of β-galactosidase, luciferase, green fluorescence protein, blue fluorescence protein, alkaline phosphotase, horseradish peroxidase, and derivatives thereof.

Claim 16 (withdrawn): A method for detecting protein-protein interaction, comprising:

providing a protein microarray having a plurality of prey fusion proteins immobilized to a solid substrate, each of said prey fusion proteins having a prey polypeptide and a first inactive reporter fused to the N-terminus of an N-intein;

contacting said protein microarray with a bait fusion protein having a bait polypeptide and a second inactive reporter fused to the C-terminus of a C-intein, wherein the ligation of said first inactive reporter and said second inactive reporter upon trans-splicing mediated by said N-intein and said C-intein results in the formation of an active reporter protein; and

detecting said active reporter protein.

Claim 17 (withdrawn): The method of Claim 16, wherein the prey polypeptide is fused to the N-terminus of said first inactive reporter.

Claim 18 (withdrawn): The method of Claim 16, wherein the prey polypeptide is fused to the C-terminus of said N-intein.

Claim 19 (withdrawn): A method for detecting protein-protein interaction, comprising:

providing a protein microarray having a plurality of prey fusion proteins immobilized to a solid substrate, each of said prey fusion proteins having a prey polypeptide and a first inactive reporter fused to the C-terminus of a C-intein;

contacting said protein microarray with a bait fusion protein having a bait polypeptide and a second inactive reporter fused to the N-terminus of an N-intein, wherein the ligation of said N-intein and C-intein upon trans-splicing results in the formation of an active reporter protein; and

detecting said active reporter protein.

Claim 20 (withdrawn): The method of Claim 19, wherein the prey polypeptide is fused to the C-terminus of said first inactive reporter.

Claim 21 (withdrawn): The method of Claim 19, wherein the prey polypeptide is fused to the N-terminus of said C-intein.

Claim 22 (withdrawn): A method for detecting protein-protein interaction, comprising:

expressing a first fusion protein in a first host cell, said first fusion protein having a signal peptide, a first test polypeptide, and a first inactive reporter fused to the N-terminus of an N-intein, said first fusion protein being secreted from said first host cell;

expressing a second fusion protein in a second host cell, said second fusion protein having a signal peptide, a second test polypeptide, and a second inactive reporter fused to the C-terminus of a C-intein, said second fusion protein being secreted from said second host cell, wherein the ligation of said first inactive reporter and said second

inactive reporter upon trans-splicing mediated by said N-intein and said C-intein results in the formation of an active reporter protein;

co-culturing said first host cell secreting said first fusion protein and said second host cell secreting said second fusion protein; and

detecting said active reporter protein.

Claim 23 (currently amended): A method for selecting compounds capable of interfering with an interaction between a first test agent and a second test agent, comprising:

providing a first fusion construct and a second fusion construct, said first fusion construct having an N-intein and said first test agent, said second fusion construct having a C-intein and said second test agent, wherein at least one of the two fusion constructs has an inactive reporter capable of being converted to an active reporter upon trans-splicing through said N-intein and said C-intein, and wherein said N-intein and said C-intein do not interact with each other;

allowing said first test agent in said first fusion construct to interact with said second test agent in said second fusion construct *in vitro* ~~in a substantially cell free environment~~ and in the presence of one or more test compounds; and

detecting said active reporter thereby detecting an interaction between the first and second test agent.

Claim 24 (withdrawn): A method for selecting compounds capable of interfering with a protein-protein interaction, comprising:

providing a first fusion protein and a second fusion protein, said first fusion protein having a first test polypeptide and a first inactive reporter fused to the N-terminus of an N-intein, said second fusion protein having a second test polypeptide and a second inactive reporter fused to the C-terminus of a C-intein, wherein the ligation of said first inactive reporter and said second inactive reporter upon trans-splicing mediated by said N-intein and said C-intein results in the formation of an active reporter protein;

mixing said first and second fusion proteins in a substantially cell free environment and in the presence of one or more test compounds; and

detecting said active reporter protein.

Claim 25 (withdrawn): The method of Claim 24, wherein said active reporter protein is detectable by a color assay.

Claim 26 (withdrawn): The method of Claim 24, wherein said active reporter protein is selected from the group consisting of β-galactosidase, luciferase, green fluorescence protein, blue fluorescence protein, alkaline phosphotase, horseradish peroxidase, and derivatives thereof.

Claim 27 (withdrawn): A method for selecting compounds capable of interfering with a protein-protein interaction, comprising:

providing a protein microarray having a plurality of prey fusion proteins immobilized to a solid substrate, each of said prey fusion proteins having a prey polypeptide and a first inactive reporter fused to the N-terminus of an N-intein;

contacting said protein microarray, in the presence of one or more test compounds, with a bait fusion protein having a bait polypeptide and a second inactive reporter fused to the C-terminus of a C-intein, wherein the ligation of said first inactive reporter and said second inactive reporter upon trans-splicing mediated by said N-intein and said C-intein results in the formation of an active reporter protein; and

detecting said active reporter protein.

Claim 28 (withdrawn): The method of Claim 27, wherein the prey polypeptide is fused to the N-terminus of said first inactive reporter.

Claim 29 (withdrawn): The method of Claim 27, wherein the prey polypeptide is fused to the C-terminus of said N-intein.

Claim 30 (withdrawn): A method for selecting compounds capable of interfering with a protein-protein interaction, comprising:

providing a protein microarray having a plurality of prey fusion proteins immobilized to a solid substrate, each of said prey fusion proteins having a prey polypeptide and a first inactive reporter fused to the C-terminus of a C-intein;

contacting said protein microarray, in the presence of one or more test compounds, with a bait fusion protein having a bait polypeptide and a second inactive reporter fused to the N-terminus of an N-intein, wherein the ligation of said first inactive reporter and said second inactive reporter upon trans-splicing mediated by said N-intein and said C-intein results in the formation of an active reporter protein; and

detecting said active reporter protein.

Claim 31 (withdrawn): The method of Claim 30, wherein the prey polypeptide is fused to the C-terminus of said first inactive reporter.

Claim 32 (withdrawn): The method of Claim 30, wherein the prey polypeptide is fused to the N-terminus of said C-intein.

Claim 33 (withdrawn): A method of selecting compounds capable of interfering with a protein-protein interaction, comprising:

expressing a first fusion protein in a first host cell, said first fusion protein having a signal peptide, a first test polypeptide, and a first inactive reporter fused to the N-terminus of an N-intein, said first fusion protein being secreted from said first host cell;

expressing a second fusion protein in a second host cell, said second fusion protein having a signal peptide, a second test polypeptide, and a second inactive reporter fused to the C-terminus of a C-intein, said second fusion protein being secreted from said second host cell, wherein the ligation of said first inactive reporter and said second inactive reporter upon trans-splicing mediated by said N-intein and said C-intein results in the formation of an active reporter protein;

co-culturing said first host cell secreting said first fusion protein and said second host cell secreting said second fusion protein in the presence of one or more test compounds; and

detecting said active reporter protein.